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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,866	07/22/2003	Yoshihiro Kato	010986.52582US	6399

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EXAMINER

LUND, JEFFRIE ROBERT

ART UNIT PAPER NUMBER

1763

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,866

Applicant(s)

KATO ET AL.

Examiner

Jeffrie R. Lund

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5 and 7-23 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 13-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7,8,10-12 and 20-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-8, and 10-12, in the reply filed on October 24, 2005 is acknowledged.

Priority

2. The present application is a continuation-in-part of PCT/JP02/00429 filed January 22, 2002 and claimed priority to Japanese Patent Application 2001-14011 filed January 23, 2001. Since the parent application is not available to the Examiner to determine what matter was added as part of the continuation, the Examiner has reviewed the application assuming a priority date of July 22, 2003.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-3, 5, 7, 8, 10-12, and 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-3, 5, 7, 8, 10-12, and 20-23 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between the first diffusion portion, the second diffusion portion, the groove and through holes of the second diffusion portion, the first

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gas flow passage, and the second gas flow passage (claim 1); or the relationship between the first diffusion portion, the second diffusion portion, the first gas flow passage, and the second gas flow passage (claim 21). The Examiner believes that the Applicant is trying to claim the showerhead shown in figures 5-8, since this embodiment is the only embodiment that includes a partitioned hollow portion having a center and end portions connected to a first and second gas supply passages (claim 1); or a center and end portions connected to a first and second gas supply passages (claim 21). The Examiner notes the first gas supply passage bypasses the first diffusion portion and diffuses in the groove of the second gas diffusion portion and flows through the through holes to center hollow portion, while the second gas supply passage diffused by the gas in the first diffusion portion and bypasses the groove and its through holes of the second diffusion portion to the end of the hollow portion. These relationships are not claimed. Furthermore, it is not clear if the through holes are the same through holes for the first gas supply passage and the second gas supply passage. The applicant needs to clearly claim all the structure found in figure 5 and how the structural elements relate to each other.

Claim 21 recites the limitations "the first independent gas flow passage" and "the second independent gas flow passage" in lines 11-13. There is insufficient antecedent basis for these limitations in the claim.

Claim 21 is indefinite in that it is not clear if the "first gas flow passage" and the "second gas flow passage" are the same passages as the "first independent gas flow passage" and "the second independent gas flow passage", or if they are different

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passages.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 5, 10, 20, and 23 are rejected under 35 U.S.C. 102(b) as being anticipate by Dhindsa et al, US Patent 6,245,192 B1.

Dhindsa et al teaches a processing system that includes: a chamber; a gas supply plate 26, which has a plurality of gas holes 54, and supplies a process gas into said chamber through the gas holes; a first diffusion portion which diffuses the gas parallel (horizontal) to a major surface and includes a plurality of linear grooves 70 or 74 formed in one side of a disk-like member 56A or 56B which are in communication with each other and include through holes; a second diffusion portion which leads gas diffused by the first diffusion portion to the gas holes and includes a groove 88 in one side of a disk-like member which forms a hollow portion, can be formed on a single disk-like member with the first diffusion portion (see disk 56B), and includes a partition member 86 which separates the hollow portion into a plurality of areas, including a center and end areas. The gas flows in mutually independent gas flow paths to the center or end areas and the flow rates can be independently controlled. The gas can be supplied from a single source. (Entire document, specifically, figures 4-6)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 7, 8, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhindsa et al, US Patent 6,245,192 B1, in view of Fujikawa et al, US Patent 5,595,606.

Dhindsa et al was discussed above.

Dhindsa et al differs from the present invention in that Dhindsa et al does not teach that the first diffusion portion is a plurality of linear holes formed by boring and sealing the end portion of each hole, or not mixing the process gases before flowing into the chamber.

Fujikawa et al teaches that the linear holes are made by boring the linear holes

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and sealing the ends of the holes (column 6 lines 47-55); and the process gas in a first independent gas flow passage and the process gas in a second independent gas flow passage do not mix before flowing into said chamber.

The motivation for making the linear grooves of Dhindsa et al linear holes is to provide an alternate means of making the apparatus of Dhindsa et al. Furthermore, the linear holes do not require a second sealing plate, which makes the apparatus easier to assemble and maintain.

The motivation for replacing the gas flow pattern of Dhindsa et al with the gas flow pattern of Fujikawa et al is to prevent the first and second gases from mixing prior to the chamber, thus preventing premature reaction of the processing gases and clogging of the gas supply passages as taught by Fujikawa et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the linear grooves and replace the flow pattern of Dhindsa et al to linear holes with a flow pattern that does not mix the process gases before they flow into the chamber as taught by Fujikawa et al.

10. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roithner et al, US Patent 6,294,026 B1, in view of Fujikawa et al, US Patent 5,595,606.

Roithner et al teaches a gas distribution system that includes: a chamber 12; a gas supply plate 24 having a plurality of gas holes 30; a first diffusion zone (located between the gas supply plate 24 and the lid 18) that distributes a gas parallel to the gas supply plate and is divided into a center portion 36 and an end portion 34 by a partition

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32; a first gas supply passage 40 independently supplying gas only to the center portion; and a second gas supply passage only supplying gas to the end portion.

Roithner et al differs from the present invention in that Roithner et al does not teach a second diffusion portion, which leads the gas diffused from the first diffusion portion to the gas holes.

Fujikawa et al teaches a gas supply system that includes a first diffusion portion 52, 54, which diffuses the gas parallel (horizontal) to a major surface; and a second diffusion portion 80, 82, which leads gas diffused by the first diffusion portion to the chamber.

The motivation for adding a second diffusing portion to the apparatus of Roithner et al is to improve the distribution and uniformity of the gas supplied from the first diffusion portion to the gas holes as taught by Fujikawa et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a second diffusion portion to the apparatus of Roithner et al as taught by Fujikawa et al.

Response to Arguments

11. Applicant's arguments with respect to claims 21 and 22 have been considered but are moot in view of the new ground(s) of rejection.

12. Applicant's arguments filed April 10, 2006 have been fully considered but they are not persuasive.

In regard to the argument that "Dhindsa et al does not teach or suggest supplying gas to a center area and to an end area via mutually independent and separate gas flow

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passages", the Examiner disagrees. First, claim 1 does not require mutually independent and separate gas flow passages. Claim 1 only requires separate gas flow passages, and Dhindsa has separate gas flow passages into the hollow portion formed by the channels 88. The claims do not require that the gases are not mixed prior to entry into the chamber.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches the technological background of the invention.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

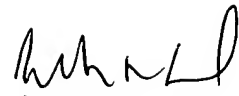
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Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Jeffrie R. Lund'.

Jeffrie R. Lund
Primary Examiner
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JRL

6/16/06